SPECIFICATION SHEET

N-CHANNEL SIC POWER MOSFET TO-247-3 LGE3M L SERIES

SPECIFICATION SHEET NO.	S1107 – LGE3M30065BL0T	
ORIGINAL MFG/PART NO.	LGE Diodes/LGE3M30065B-L	
NEXTGEN PART CODE	LGE3M30065BL0T	Indicate This Code For RFQ /Order
DATE	Nov. 07, 2025	
REVISION	A3	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	Silicon Carbide (SiC) MOSFET, 3 Pins, Case TO-247-3, LGE3M L Series, N-Channel, Drain-Source Voltage (V_{DS}): 650V Drain-Source On-State Resistance $R_{DS(ON)}$: 30mΩ Continuous Drain Current (I_D) @ Tc=25℃: 91A Operating Temperature: -55°C ~ 175°C (T_J) Package in Tube, 30pcs/Tube RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE
Issued/Checked/Approved Mandy Xu · Ruby Zhang · Jack Zhang
Effective Date: Nov. 07, 2025

CUSTOMER APPROVE
Date:

MAIN FEATURE

Image shown is a representation only. Exact specifications should be obtained from the product dimension.

- High Blocking Voltage with Low On-Resistance
- High Frequency Operation
- Fast Intrinsic Diode With Low Reverse Recovery
- Higher System Efficiency
- Parallel Device Convenience Without Thermal Runaway
- High Temperature Application
- Hard Switching & Higher Reliability
- Easy to drive
- Meet MSL 1 Requirement
- Cross Competitors Parts and More.
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)

APPLICATION

- Motor Drives & Solar / Wind Inverters
- Onboard EV Charger
- Energy Storage
- Server
- Telecom
- SMPS
- Uninterruptable power supplies

ELECTRICAL CHARACTERISTICS

- See Page 5 ~ Page 7.
- All Products Parameters are Subject To NextGen Components' Final Confirmation.

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code LGE3M30065BL0T For RFQ and Order.

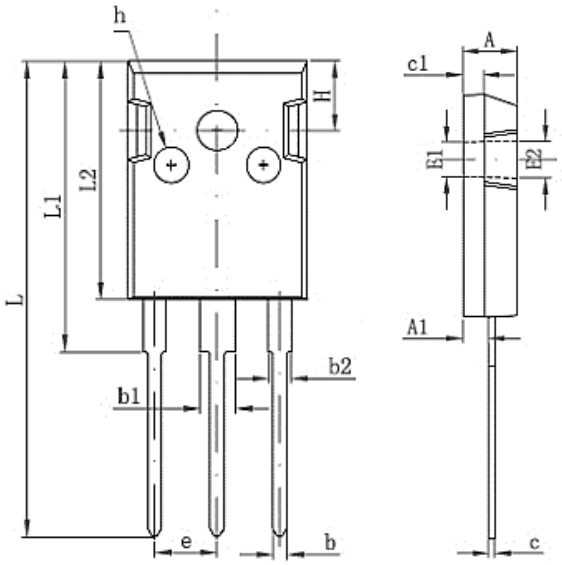
PART CODE GUIDE

RFQ
Request For Quotation

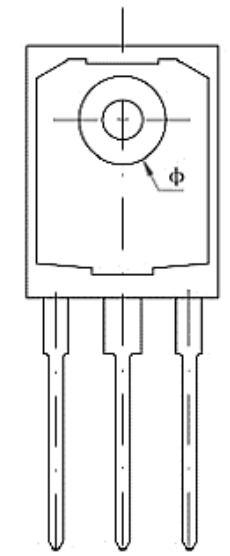
CODE	NAME	KEY SPECIFICATION OPTION
LGE3M	Product Series Code	Silicon Carbide (SiC) MOSFET, 3 Pins, Case TO-247-3, LGE3M L Series
30	Drain-Source On-State (V_{DS}) Resistance $R_{DS(ON)}$ Code	30: 30mΩ
065	Drain-Source Voltage (V_{DS}) Code	065: 650V Max.
B	Package Case Code	B: TO-247-3; E: TO-263-2; J: TO-263-7; Q: TO-247-4;
L0T	Internal Control Code	Letter A~Z, a-z or Digits (0-9)
XX	Special/Custom Parameters	Blank: N/A; XX: Letter A~Z, a~z or digits (0~9) for Special/Custom Parameters

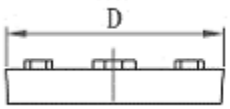
DIMENSION - - Unit: (mm), Case TO-247-3 Outline

Top View



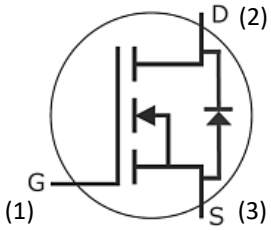
Side View

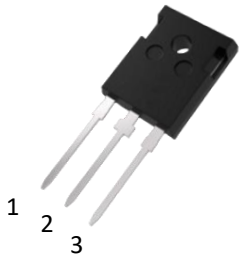




SYMBOL	TO-247-3	
	Min.	Max.
A	4.85	5.15
A1	2.2	2.6
b	1.0	1.4
b1	2.8	3.2
b2	1.8	2.2
c	0.5	0.7
c1	1.9	2.1
D	15.45	15.75
E1	3.5REF	
E2	3.6REF	
L	40.9	41.3
L1	24.8	25.1
L2	20.3	20.6
ϕ	7.1	7.3
e	5.45TYP	
H	5.98REF	
h	0	0.3

INTERNAL CIRCUIT DIAGRAM





650V N-CHANNEL SiC MOSFET

VDS	ID @ Tc=25℃	R DS(on)	MARKING	PACKAGE/CASE
650V	91A	30mΩ	LGE3M30065B	TO-247-3

MAX. RATINGS @Tc=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Drain-Source Voltage	V_{DSMax}	V_{GS}=0V, I_D=100μA	650	V
Gate-Source Voltage(dynamic)	V_{GSMAX}	AC (f>1 Hz)	-10/+25	V
Gate-Source Voltage(static)	V_{Gsop}	static	-5/+20	V
Continuous Drain Current	I_D	V_{GS}=20V, T_C=25°C	91	A
		V_{GS}=20V, T_C=100°C	64	
Pulsed Drain Current	$I_{D(pulse)}$	T_C=25°C	212	A
Short Circuit Capability	t_{sc}	V_{DD} =400V, V_{GS} =20V	10	μS
Short Circuit Capability	I_{DS}	V_{DD} =400V, V_{GS} =20V	400	A
Total Power Dissipation	P_D	Tc=25°C	326	W
Operating Junction Temperature Range	T_J		-55 ~ +175	°C
Storage Temperature Range	T_{STG}		-55 ~ +150	°C

ELECTRICAL CHARACTERISTICS PART I - @Tc=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=100µA	650	-	-	V
Gates Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=10mA	2.0	3.0	4.0	V
		V_{DS}=V_{GS}, I_D=10mA, T_J=150°C	-	2.2	-	
		V_{DS}=V_{GS}, I_D=10mA, T_J=175°C	-	2.0	-	
Zero Gates Voltage Drain Crurent	I_{DSS}	V_{DS}=650V, V_{GS}=0V	0	1	100	µA
Gates-Source Leakage Crurent	I_{GSS}	V_{GS}=20V, V_{DS}=0V	0	10	200	nA
		V_{GS}=-5V, V_{DS}=0V	-200	-10	0	
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=15V, I_D=40A	-	55	-	mΩ
		V_{GS}=15V, I_D=40A, T_J=150°C	-	41	-	
		V_{GS}=15V, I_D=40A, T_J=175°C	-	42	-	
		V_{GS}=20V, I_D=40A	-	30	36	
		V_{GS}=20V, I_D=40A, T_J=150°C	-	33	-	
		V_{GS}=20V, I_D=40A, T_J=175°C	-	35	-	
Transconductance	g_{fs}	V_{DS}=20V, I_D=40A	-	21	-	S
		V_{DS}=20V, I_D=40A, T_J=150°C	-	20	-	
		V_{DS}=20V, I_D=40A, T_J=175°C	-	19	-	
Input Capacitance	C_{iss}	V_{DS}=400V, V_{GS}=0V, f=1MHz	-	2940	-	pF
Output Capacitance	C_{oss}		-	280	-	pF
Reverse Transfer Capacitance	C_{rss}		-	14	-	pF
Coss Stored Energy	E_{oss}		-	28	-	µJ
Turn-On Switching Energy	E_{on}	V_{DS}=400V, V_{GS}=-5V/20V, I_D=40A, $R_{G(ext)}$=2Ω, L=200µH	-	209	-	µJ
Turn-Off Switching Energy	E_{off}		-	39	-	µJ
Turn-On Delay Time	$t_{d(on)}$		-	13	-	ns
Rise Time	t_r		-	30	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	29	-	ns
Fall Time	t_f		-	6	-	ns

ELECTRICAL CHARACTERISTICS PART II - @Tc=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Internal Gate Input Resistance	$R_{G(int)}$	f=1MHz, I_D =0A	-	2.0	-	Ω
Gate to Source Charge	Q_{GS}	V_{DS}=400V, V_{GS} =-5V/20V I_D =40A	-	45	-	nC
Gate to Drain Charge	Q_{GD}		-	63	-	nC
Total Gate Charge	Q_G		-	147	-	nC
Avalanche Capability	E_{AS}	V_{DD}=100V, V_{GS} =20V L =1mH	-	338	-	mJ
	I_A		-	26	-	A

REVERSE DIODE CHARACTERISTICS @Tc=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Diode Forward Voltage	V_{SD}	V_{GS} =-5V, I_{SD} =20A	-	4.1	-	V
		V_{GS} =-5V, I_{SD} =20A, T_C=150℃	-	3.7	-	
		V_{GS} =-5V, I_{SD} =20A, T_C=175℃	-	3.6	-	
Continuous Diode Forward Current	I_S	V_{GS} =-5V	-	62	-	A
Reverse Recovery Time	t_{rr}	V_{GS} = -5V, I_{SD} =40A V_R=400V, dif/dt = 4000 A/μs	-	24	-	ns
Reverse Recovery Charge	Q_{rr}		-	345	-	nC
Peak Reverse Recovery Current	I_{rrm}		-	23	-	A

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			MIN.	TYP.	MAX.	
Thermal Resistance	Rth(j-c)	junction-case	-	0.37	0.46	°C/W

TYPICAL PERFORMANCE (For Reference Only)

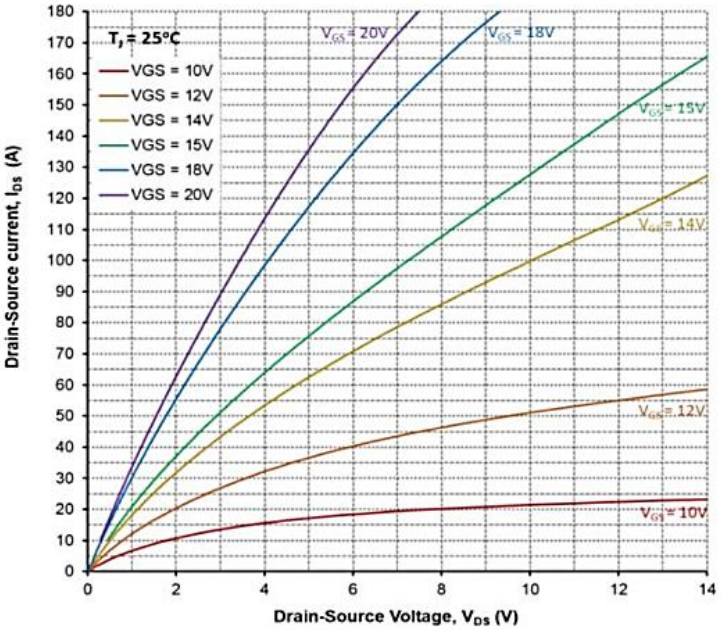


Figure 1. Output Characteristics, T_J = 25°C

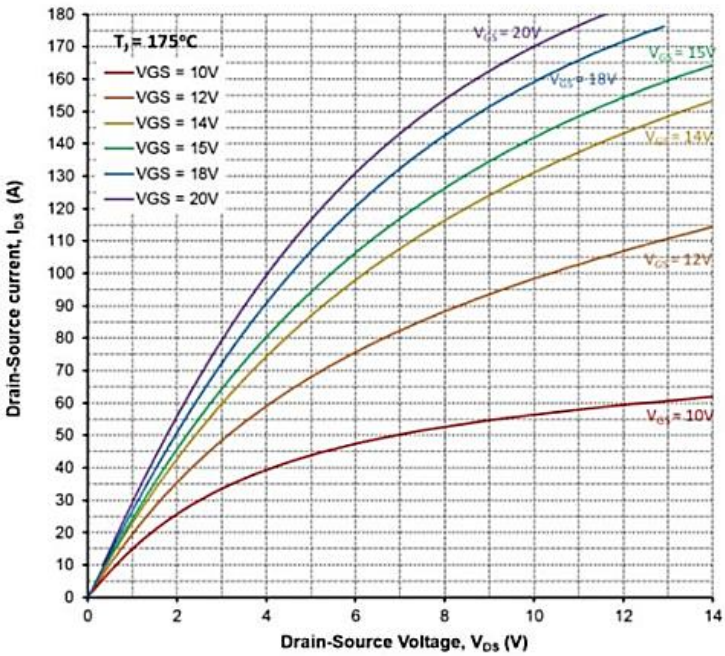


Figure 2. Output Characteristics, T_J = 175°C

TYPICAL PERFORMANCE (For Reference Only)

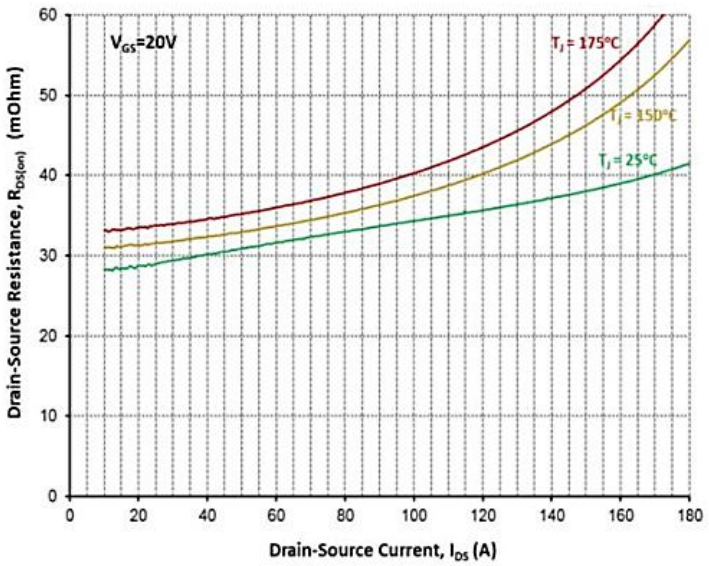


Figure 3. On-Resistance vs. Drain Current
For Various Temperatures

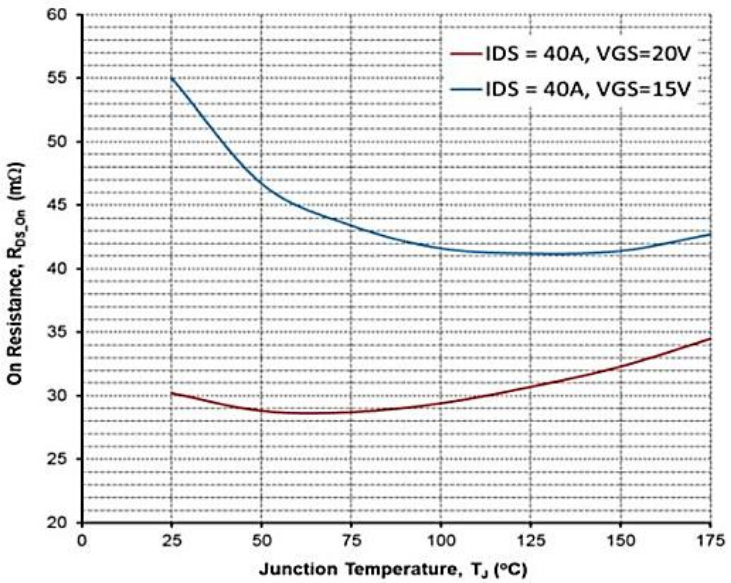


Figure 4. On-Resistance vs. Temperature

TYPICAL PERFORMANCE (For Reference Only)

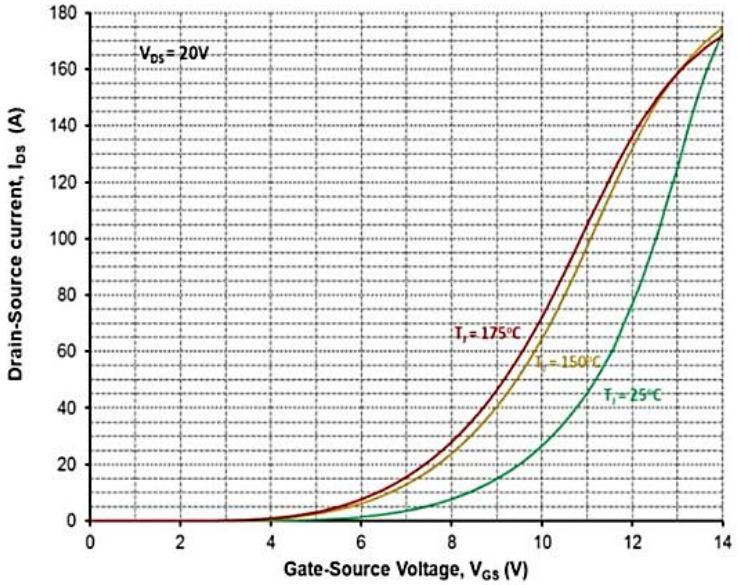


Figure 5. Drain-Source Current vs. Gate-Source Voltage

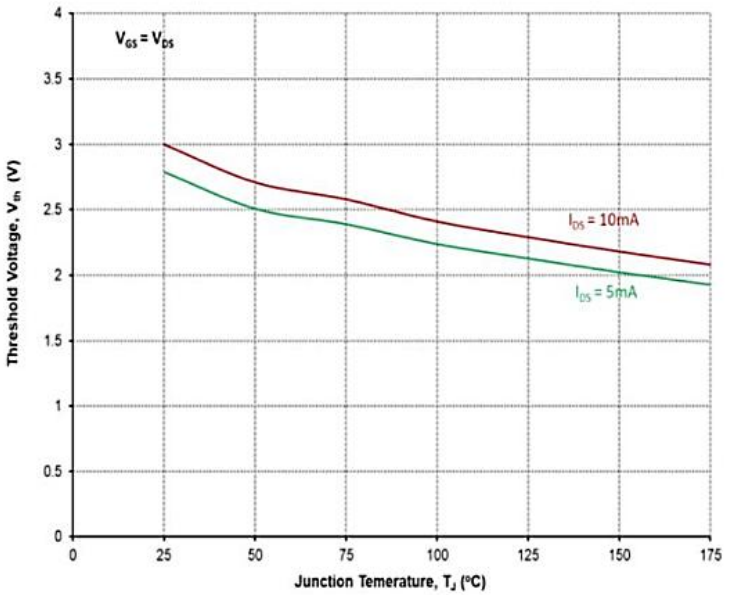


Figure 6. Threshold Voltage vs. Temperature

TYPICAL PERFORMANCE (For Reference Only)

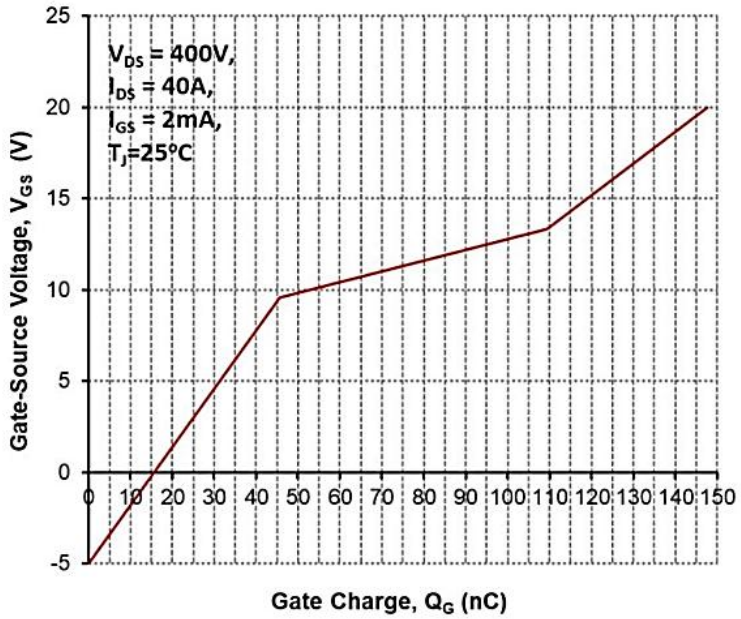


Figure 7. Gate Charge Characteristics

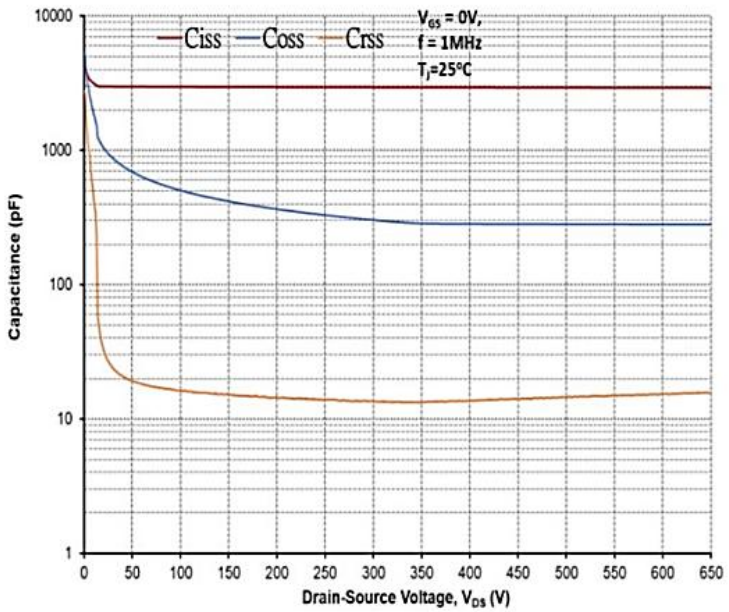


Figure 8. Capacitances vs. Drain-Source Voltage (0-650V)

TYPICAL PERFORMANCE (For Reference Only)

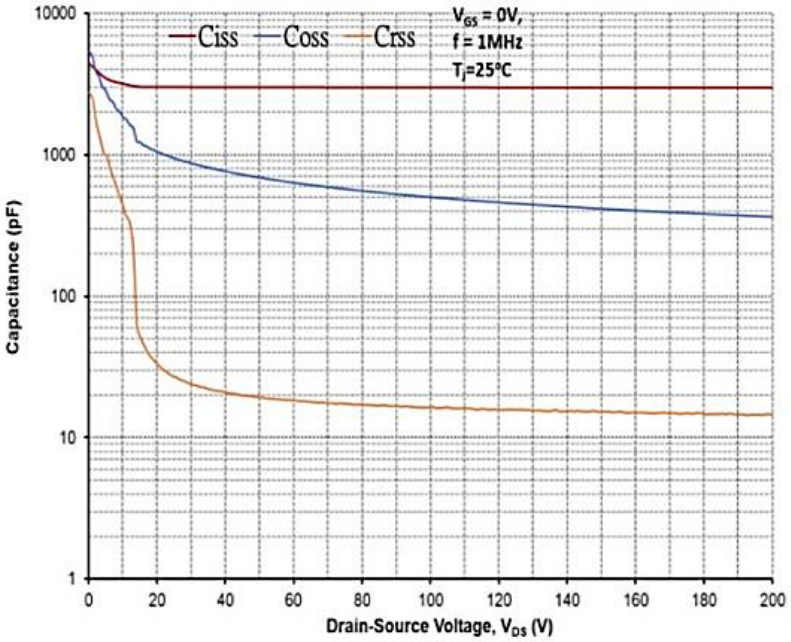


Figure 9. Capacitances vs. Drain-Source Voltage (0-200V)

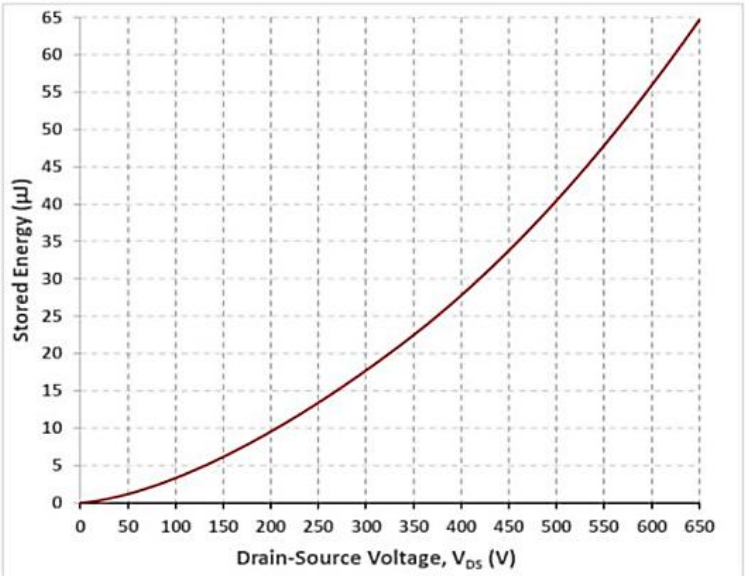


Figure 10. Output Capacitor Stored Energy

TYPICAL PERFORMANCE (For Reference Only)

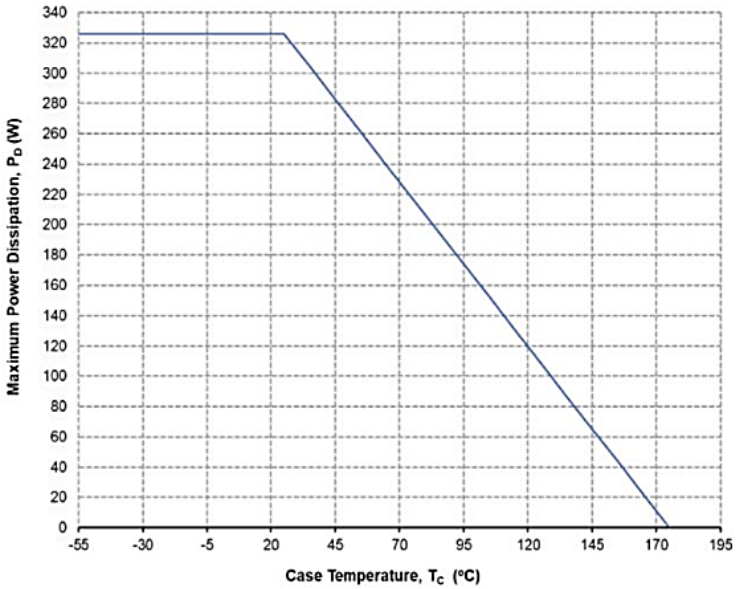


Figure 11. Maximum Power Dissipation Derating vs. Case Temperature

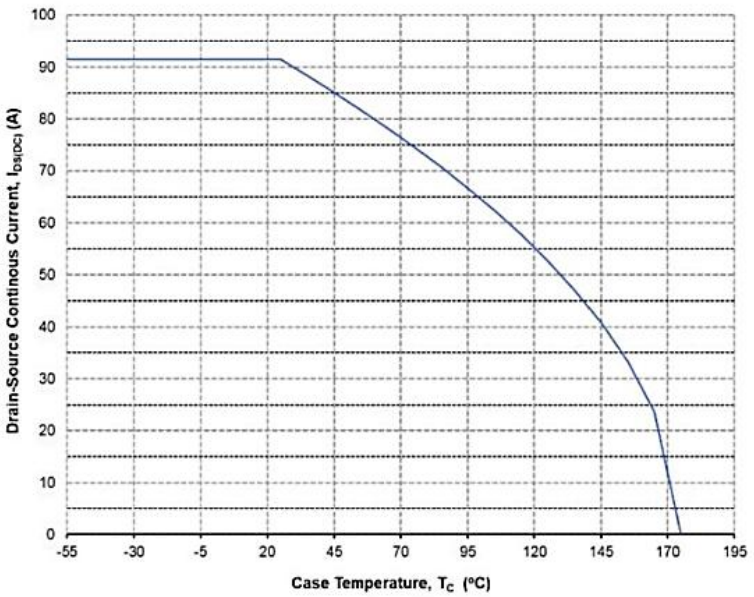


Figure 12. Continuous Drain Current Derating vs. Case Temperature

TYPICAL PERFORMANCE (For Reference Only)

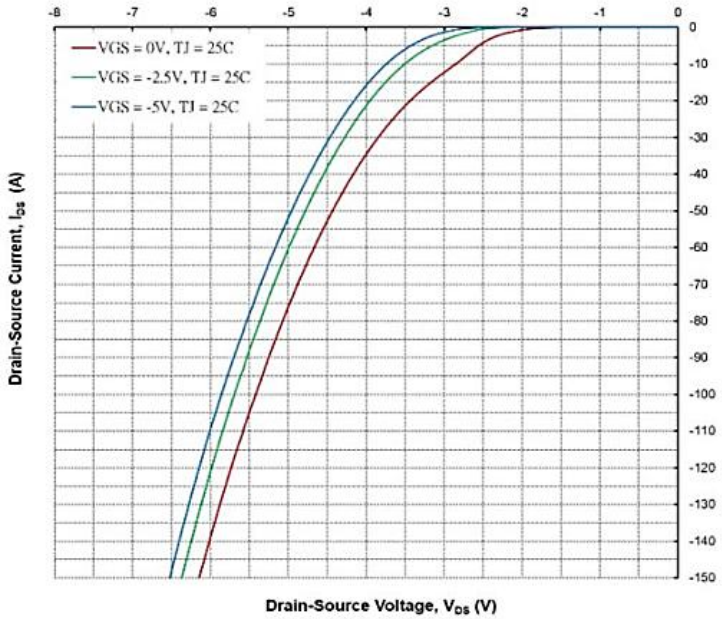


Figure 13. Body Diode Characteristics @ 25°C

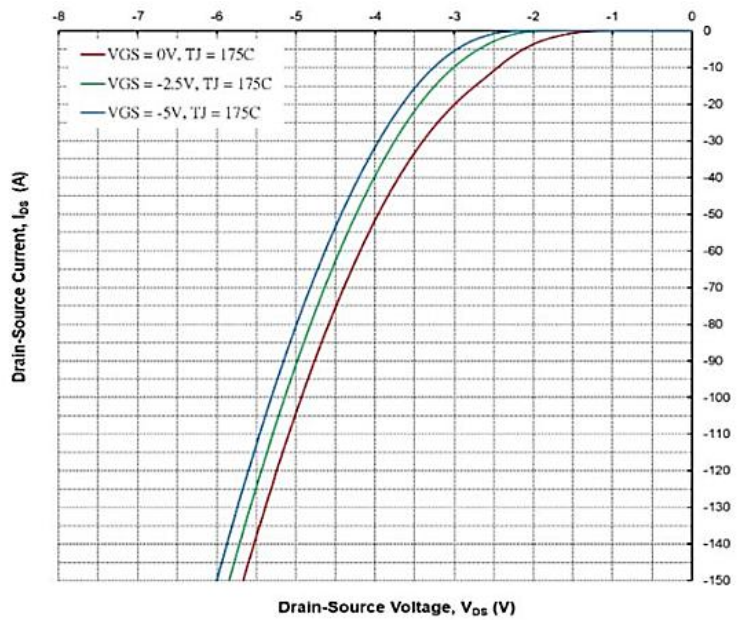


Figure 14. Body Diode Characteristics @ 175°C

TYPICAL PERFORMANCE (For Reference Only)

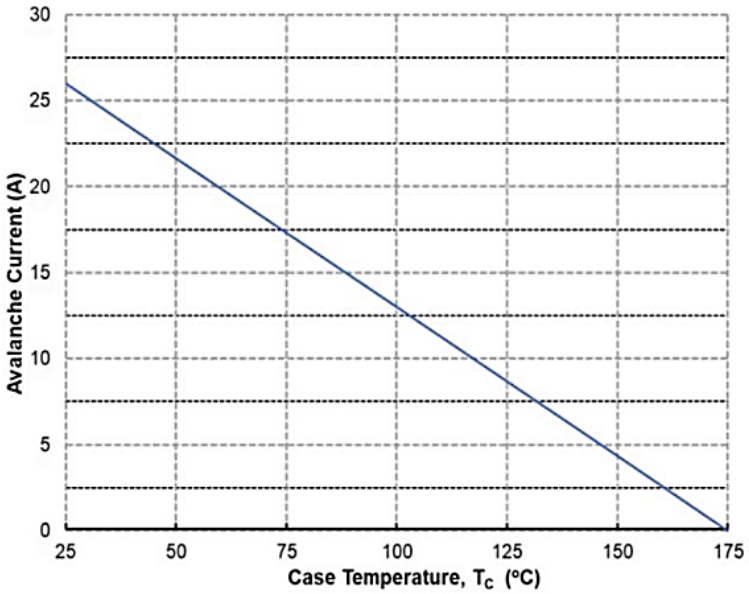


Figure 15. Single Avalanche vs. Temperature

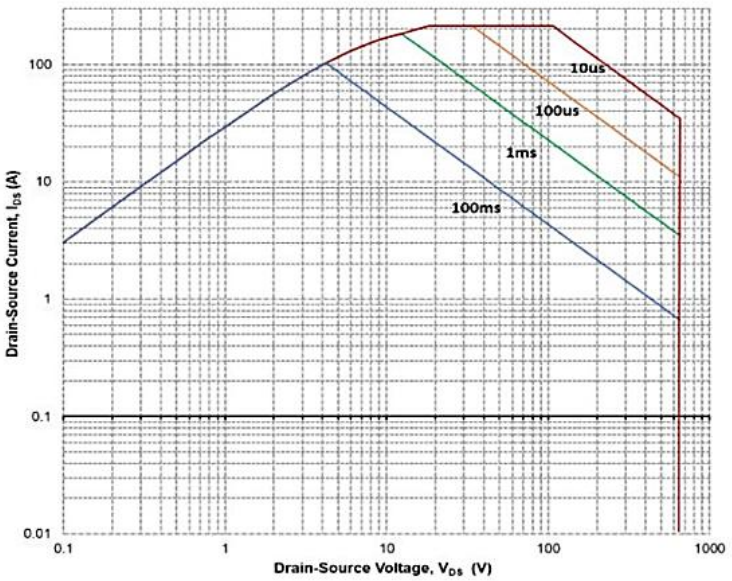
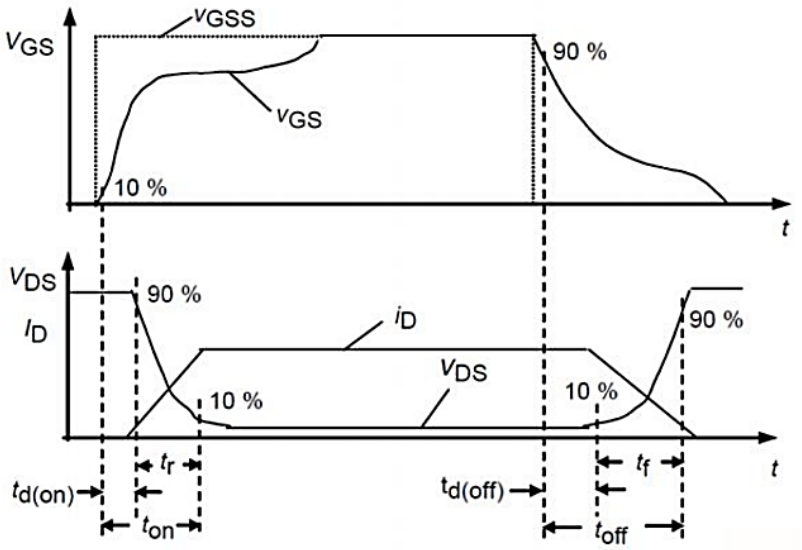
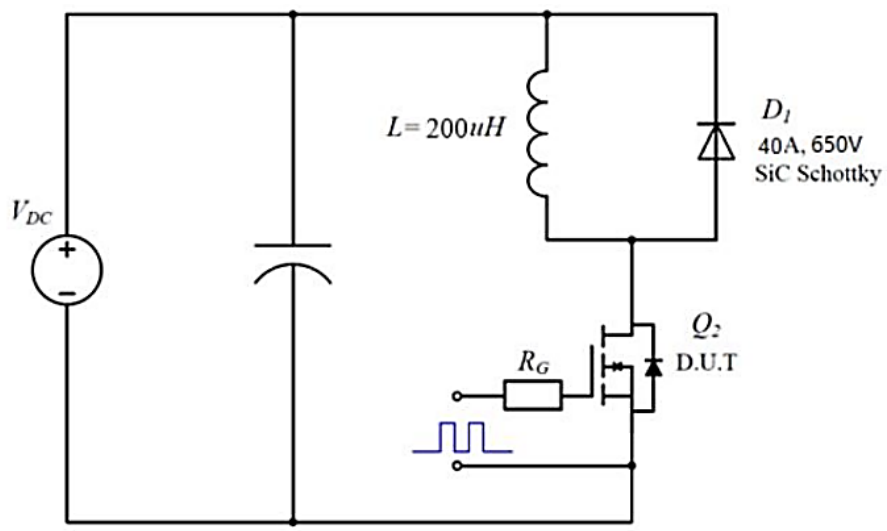


Figure 16. Safe Operating Area

SWITCHING TIMES DEFINITION AND TEST CIRCUIT (For Reference Only)





IMPORTANT NOTES AND DISCLAIMER

1. ROHS COMPLIANCE: The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained can be obtained at Download Center.
2. REACH COMPLIANCE: REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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